



# Radioactive Iodine ( $^{131}\text{I}$ )

## *Veterinary Practitioner Factsheet*



UCD Veterinary Hospital  
Belfield Campus, Dublin 4  
Web: <http://www.ucd.ie/uvh>  
Email: [vethospital@ucd.ie](mailto:vethospital@ucd.ie)

# Radioactive Iodine ( $^{131}\text{I}$ )

## Veterinary Practitioner Factsheet

### **WHAT CASES ARE BEST SUITED TO $^{131}\text{I}$ TREATMENT?**

Almost all cats with hyperthyroidism are suitable candidates for radioactive iodine therapy but particularly

- Cats with bilateral thyroid lobe involvement (~ 70% of cases) where there is a risk of postoperative hypoparathyroidism
- Cats that are difficult to medicate orally
- Cats that have suffered moderate to severe adverse reactions from methimazole or carbimazole therapy
- Cats with ectopic thyroid tissue or those with recurrent hyperthyroidism after previous thyroidectomy.

There are few specific contraindications but they do include

- Cats with significant concurrent non-thyroidal illness that requires daily medication or that adversely affects prognosis
- Cats with rare functional thyroid carcinoma where extremely high dose  $^{131}\text{I}$  therapy is required.

### **HOW DOES $^{131}\text{I}$ THERAPY WORK?**

Radioactive iodine is administered subcutaneously and is subsequently concentrated by thyroid tissue in much the same way as stable iodine is.  $^{131}\text{I}$  emits both gamma radiation and beta particles. The beta particles cause over 80 % of the damage but have a maximum path length of 2 mm and an average of 400  $\mu\text{m}$ . They are therefore locally destructive but have no effect on parathyroid tissue, normal atrophic thyroid tissue or any other cervical structure.

### **ADVANTAGES OVER MEDICAL OR SURGICAL APPROACHES**

- Effective – over 95 % of cats are cured with a single subcutaneous injection
- Simple – cats only require light sedation for administration
- Safe – there are few adverse reactions and it removes the need for oral medications and the risk of anaesthetic or surgical complications.

## ***DISADVANTAGES OF <sup>131</sup>I THERAPY***

- It involves a non-negotiable two-week hospitalisation period
- Owner visits are strictly forbidden during this time
- Handling of cats while isolated is controlled and minimal. All cats must therefore be carefully evaluated to ensure they are suitable candidates to undergo <sup>131</sup>I therapy. Animals that require additional daily medication and monitoring for concurrent illnesses, with few exceptions, cannot be treated.
- Treatment failure, although rare, is possible. A single injection fails to induce euthyroidism in <5% of cats (most will respond to a second injection). A small number (<5%) develop permanent hypothyroidism and require life-long thyroxine supplementation.

## ***HOW ARE CASES EVALUATED PRIOR TO <sup>131</sup>I TREATMENT ?***

All cats must be individually assessed at the UCD Veterinary Hospital before being considered as suitable candidates for <sup>131</sup>I treatment. It is preferable for cats to be evaluated before starting any medical therapy for hyperthyroidism as this allows accurate assessment of the <sup>131</sup>I dose required.

Investigations prior to receiving an appointment for <sup>131</sup>I therapy include, but are not confined to;

- A complete history and physical examination
- Complete routine clinicopathological analyses including haematology, biochemistry, urinalysis and urine culture
- Blood pressure measurement
- Cardiac ultrasound (and thoracic radiography if necessary)
- Serum total T4 concentration

Prior blood sample results may fulfil some of these requirements but only if the analyses have been carried out at the UCD Veterinary Diagnostic Laboratory.

Once deemed a suitable candidate, an appointment will be made for <sup>131</sup>I treatment. The dose must be ordered at least 2 weeks prior to the injection date and at that time a non-refundable 50% deposit will be requested from the owners.

If medical therapy with methimazole or carbimazole is commenced while on the waiting list, it should be stopped 5 - 9 days prior to the scheduled injection date.

## **WHAT DOES TREATMENT WITH <sup>131</sup>I INVOLVE?**

### **Assessment day**

Owners will be provided with a suitable appointment for assessment and most, if not all, required investigations will be carried out on the same day without the need for hospitalisation. Payment for this assessment will be required before the cat is discharged.

### **Order day**

The <sup>131</sup>I will be ordered approximately two weeks before the due injection day. Clients will be requested to pay a 50% deposit on this day, which is non-refundable.

### **Admission day**

Cats will be admitted to the UCD Veterinary Hospital early in the week allowing for a two-day acclimatisation period, during which any remaining or incomplete tests will be performed. The final 50% payment for the treatment is due on this day.

### **Injection day**

<sup>131</sup>I will be injected mid-week following appropriate sedation.

### **Hospitalisation period**

The cat will remain hospitalised for a non-negotiable two-week period. All waste will be collected and disposed of appropriately. During the isolation period there will be minimal handling but environmental enrichment ensured through the use of audio and video material. During this two-week period owner visiting is not possible and in the unlikely event of death, the body will be kept on site and disposed of as radioactive waste.

### **Prior to discharge the following tests are performed**

- Repeat clinicopathological analyses including haematology, biochemistry and urinalysis
- Repeat blood pressure measurement
- Repeat serum total T4 analysis.

### **Discharge of cat back to client**

When the cat is discharged the emitted radiation will be minimal, allowing clients to handle their cat without restriction and to dispose of their cat's urine and faeces as before.

In the unlikely event of a cat requiring additional unforeseen treatment, clients will be advised of any extra costs prior to commencing such treatment and will be asked for payment of any associated invoices before discharge.

## **HOW DO YOU BOOK A CAT FOR THIS TREATMENT?**

Please contact reception (01 716 6000/716 6002) to arrange the initial appointment during which the cat's suitability will be assessed. Prior to this appointment please send all relevant information to the UCD Veterinary Hospital. Once the cat has been deemed suitable a return appointment for radioactive iodine treatment will be provided. Two weeks prior to this appointment (on the day that the <sup>131</sup>I order is placed) a 50% non-refundable deposit will be requested from the owner. Please ensure that any anti-thyroid medication is stopped 5 – 9 days prior to the anticipated injection date.